

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 September 2004 (30.09.2004)

PCT

(10) International Publication Number
WO 2004/083654 A1

(51) International Patent Classification⁷: **F16B 13/08**,
13/06

Ian [GB/GB]; 46 St. Michaels Road, Worthing, West Sussex BN11 4RZ (GB).

(21) International Application Number:
PCT/GB2004/000984

(74) Agents: JENNINGS, Nigel, Robin et al.; Kilburne & Strode, 20 Red Lion Street, London WC1R 4PJ (GB).

(22) International Filing Date: 11 March 2004 (11.03.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0306060.5 17 March 2003 (17.03.2003) GB

(71) Applicant (for all designated States except US): RICARDO UK LIMITED [GB/GB]; Bridge Works, Shoreham-by-Sea, West Sussex BN43 5FG (GB).

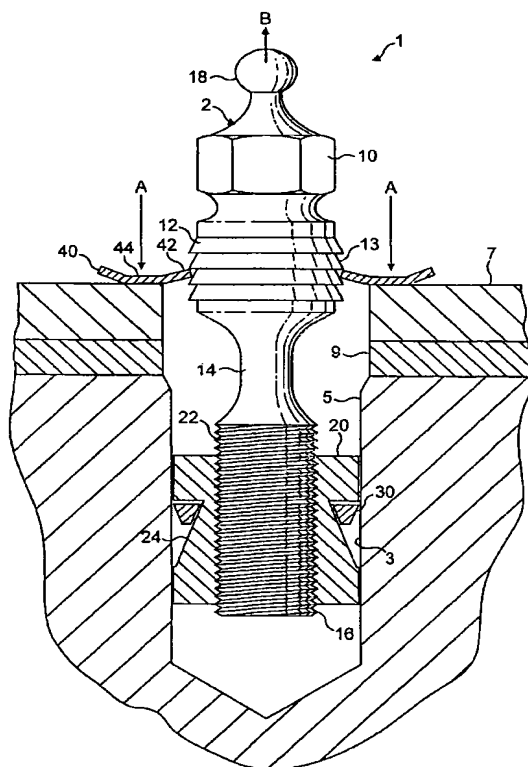
(72) Inventor; and

(75) Inventor/Applicant (for US only): THOMPSON, David,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: A FASTENING DEVICE



(57) Abstract: A fastening device (1) comprises a shank (2) having a head (10) at one end, a ribbed portion (12) adjacent to the head portion, a neck portion (14) and a threaded portion (16). The fastening device also comprises a cylindrical retainer (20) whose diameter is substantially equal to that of the bore (3) into which it is to be installed. The retainer (20) affords a central hole whose wall carries a screw thread which is in threaded engagement with the threaded portion (16) of the shank (2). The outer surface of the retainer (20) affords a tapered recess (24). In use, the threaded portion (16) of the shank is engaged within the threaded hole in the retainer (20) which is then placed into a bore in which it is to be secured. Positioned within the space constituted by the recess (24) is an expansible split ring (30). A spring (40) engages the margin of the bore and acts on the ribbed portion (12) of the shank to urge the shank out of the bore. As it moves out of the bore, the tapered surface on the shank defining the recess (24) comes into engagement with the inner surface of the expansible ring (30), the outer surface of which is forced into engagement with the wall of the bore. The shank and retainer are thus jammed in position in the bore.

WO 2004/083654 A1



Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*